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Monte-Carlo Shielding Calculations for a 10-MeV Electron Accelerator in Botswana

The Botswana International University of Science and Technology is looking at the possibility of commissioning an electron beam accelerator facility for research and industrial applications. Botswana has a particular interest to sterilize meat for export as the meat industry plays an important role in Botswana's economy and represents the country's third main income earner. Additional applications of the electron beam of interest include; sterilization of single-use medical devices and pharmaceuticals, wastewater and sludge treatment, cargo screening and postal mail decontamination. We present Monte-Carlo-based FLUKA calculations to inform the design of biological shielding in compliance with the best international nuclear safety practices. In the present calculations, the shielding is designed to attenuate the biological dose rate to less than 5 μSv/h during normal operation.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

MSc

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